Ethical Analysis of Soma Mining Inc.'s Role in the Soma Coal Mine Fire, Turkey, 2014

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Abstract

This report presents an ethical analysis of the actions taken by Soma Mining Inc. regarding the Soma Mine Disaster as well as an evaluation of their existing safety infrastructure. Soma Mining Inc. is responsible for neglecting worker safety in order to prioritize company profits. Failure to provide functional safety equipment, construct emergency escape routes and safe rooms, establish a reliable system for communication, as well as implement a practiced emergency response plan led to the tragic deaths of 301 workers and the injury of an additional 80. The Turkish government perpetuates this negligence of worker safety as a result of their agenda to maximize profits from the mining industry. The Turkish government owns the majority of Turkish coal mines and exercises control over the safety regulation of these mines. The profit-driven interests of the Turkish government pose a conflict of interest when making decisions regarding the enforcement of safety standards in the mining industry. Enabled by such corruption, Soma Mining Inc. ignored the standards set forth by mining safety regulations. Soma Mining Inc. is directly responsible for the mass worker casualty of the Soma Mine Disaster as well as the devastating economic and social consequences that befell the surrounding communities. The actions of Soma Mining Inc. are evaluated against the International Council on Mining and Metals (ICMM) Mining Principles.

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Introduction

On May 13, 2014, a fire ignited in the Soma Mine of Manisa, Turkey, trapping hundreds of workers in multiple underground chambers of the mine. Without an emergency escape route or any standardized emergency protocol in place, carbon monoxide poisoning claimed the lives of 301 workers and injured 80 more. (Düzgün & Leveson, 2018, p. 135). Lives were needlessly sacrificed as a result of poor safety infrastructure and unprepared company management in responding to the situation.

The Soma Mine Disaster was not a surprise to the Turkish people as the Turkish mining industry is known for its widespread disregard for worker safety. This negligence has worsened since the Turkish government began privatizing the mining sector in the 1980s (Aksoğan, Bayram, & Çiftçi, 2014, p. 7). Privatization removes the government from direct supervision of the mines and grants private companies complete operational oversight. Private companies have taken advantage of their effective autonomy to drive down the cost of coal production at the expense of safety infrastructure. Attempts to hold companies accountable for jeopardizing worker safety are often dismissed out of mutual interest between the government and company owners since the majority of the excavated coal is sold directly to the government (Aksoğan et al., 2014, pp. 6-7).

The main objective of the Turkish government is to rapidly grow the mining industry into a lucrative business and profit from the increase in coal production. Because of this, the government is unwilling to allocate necessary resources and attention to preserving the lives of the mining workforce. The government's priorities disincentivize proper maintenance of safety infrastructure and endanger the lives of the mining workforce.

Under such lax government administration, Turkish mining companies have normalized a culture of subpar safety standards. The private company that controlled the operations of the Soma Mine, Soma Mining Inc., took advantage of such lax safety standards to cut costs of production (Aksoğan et al., 2014, p. 7). The Soma Disaster was a direct result of the unethical negligence practiced by Soma Mining Inc. with regards to worker safety. These practices were fueled by the prioritization of profits over the implementation of safety infrastructure.

The actions of Soma Mining Inc. regarding the Soma Mine Disaster are analyzed using the International Council on Mining and Metals (ICMM) Mining Principles. The ICMM is an elite coalition of 27 mining and metals companies and over 30 regional mining and commodity associations from around the world. Members of the ICMM uphold the standard of ethical and sustainable practices outlined by the ICMM Mining Principles (ICMM, 2018, p. 2). The widespread implementation of the ICMM Principles is the basis for the universal application of the code, deeming it an appropriate set of standards for the Soma Mine Disaster (ICMM, 2020, p. 1). The ethical analysis section explores the principles of the ICMM code that were violated by Soma Mining Inc. both in response to this incident and within the safety infrastructure established prior to it.

This report begins with a technical analysis of what occurred in the disastrous event. Details and diagrams illustrate the layout of the Soma Mine and the location of fire that is considered to be the source of the incident (Düzgün & Leveson, 2018, p. 39). Following this section is an ethical analysis of the actions of Soma Mining Inc. on the basis of the International Council on Mining and Metals (ICMM) Mining Principles. The next section explores the lasting social and economic impacts that the mining disaster had on the local communities surrounding the Soma Mine. The final section emphasizes the relevance of the Soma Mine Disaster in the context of the Turkish

mining culture and introduces changes that should be made to ensure a better standard of worker safety for the future.

A Closer Look at Privatization of the Turkish Mining Industry

Before privatization, coal mines were owned and operated by the government. Under the privatized system, private companies bid money for the rights to operate a given mine. The highest bidding company typically secures the mining license and enters a subcontracting agreement with the government agency that owns the mine. The mine is handed over with little consideration for the values or operational standards of the company (Aksoğan et al., 2014, pp. 2-3).

The government owns nearly every mine in the country and simultaneously holds complete control over the safety regulations of these mines. This setup presents an ethical conflict because the government is biased to make decisions towards its own benefit. The government profits when mining companies reduce the costs of production, regardless of the means. When reducing the cost of production deprives workers of acceptable safety infrastructure, the government is faced with a choice between supporting the well-being of mine workers and increasing government profits. The Turkish government has chosen to forgo efforts to properly regulate the safety infrastructure of the mines in favor of prioritizing profits, placing a greater importance on the economic productivity of the mines over the safety of the miners.

What caused the deaths?

This section first presents a history of companies that operated the Soma Mine following the privatization of the mining industry. The history also illustrates that Soma Mining Inc. had prior knowledge of structural safety issues in the mine. Following, is a detailed technical description of the events that occurred during the Soma Mine Disaster. This section explores the underlying issues and decisions that are considered the root cause of the fatalities.

History of the Soma Mine

According to an article from the *Journal of Safety Science*, the Soma Mine was first owned and operated by the government organization, Turkish Coal Enterprises, from 1990 to 2006. Mining rights were then transferred to a private company, Park Teknik A.Ş., while the government maintained ownership of the mine. After only three years of operation, the contract was terminated due to operational hazards (Leveson & Düzgün, 2018, p. 38). The mine's structural design posed a prominent concern for worker safety as well as the sustainability of mining operations. In the initial construction, the mine was built without emergency exits and safe rooms, which were enclosed areas that protected workers from contaminated air (Hansen, 2014). In 2009, the company Soma Holdings took over the Soma Mine, in spite of these hazards and knowingly subjected their workers to unsafe working conditions (Leveson & Düzgün, 2018, p. 38).

Disaster Analysis

On the day of the incident, an unexpected fire in the main roadway caused a power outage throughout the Soma Mine (Leveson & Düzgün, 2018, p. 39). Poisonous carbon monoxide gas released from the fire traveled throughout the mine and quickly reached the workers. After two hours, a search and rescue team finally arrived on site (Hansen, 2014). This team took three days to completely recover all of the deceased workers from the mine (Leveson & Düzgün, 2018, p. 40).

According to the Centers for Disease Control and Prevention, inhalation of carbon monoxide gas can cause death in the span of minutes (CDC, 2019). To protect workers from this deadly gas, typical mines provide air-purifying respirators to filter out harmful gases in the case of a fire (Workplace Safety North, 2018). The majority of these masks supplied to the miners of Soma Mine were expired and no longer functional. When carbon monoxide began spreading through the

mine, most miners died instantly. Even if a miner got lucky with a functional mask, they still only had about 45 minutes of use (Hansen, 2014).

Small fires were a common occurrence at the Soma Mine. Although the safety procedures of the mine called for evacuation in the case of a fire, the mine management staff had long since stopped requiring evacuation because fires were usually controllable. Someone would quickly extinguish the fire, and the mine operations would remain unaffected. This assumption led management to do nothing in the initial response to the Soma Mine fire. By the time the fire grew, it was too late to call for an evacuation. The fumes blocked both the entryway and exit, and without functional masks, the workers were trapped (Leveson & Düzgün, 2018, pp. 49-50).

When the search and rescue team arrived, they attempted to enter the mine, but the smoke emanating out of the entrance was too strong. To divert this smoke, mine management switched the direction of the airflow, but as a result, further spread the noxious fumes to previously unaffected areas of the mine. Shortly after, fainting and death of the workers began in the newly affected areas of the mine (Leveson & Düzgün, 2018, p. 40).

A map of the mine layout (Figure 1) is included to further explain the effect of reversing the direction of the airflow in the mine. The mine is separated into sections called panels, which are underground workrooms where excavation takes place. Panels A, H, and S labeled in the figure were the only panels that contained workers at the time of the disaster (Leveson & Düzgün, 2018, p. 39).

The mine ventilation system (indicated by the blue lines in Figure 1) operated with only one direction of airflow. Fresh air entered the mine from the two lower entrances (indicated by the black arrows) and flowed in a counter-clockwise direction following the two inlet streams. These streams flowed through the panels in a pentagonal path and proceeded to exit the ventilation pipes

back near the entrance to the mine. The starting location of the fire is indicated by a red dot in the figure. The initial ventilation flow cycled the smoke from the fire downstream towards Panel S. Thus, Panel S was the only panel that was initially affected by the smoke. When the mine management team reversed the direction of the airflow, the air was circulated in the opposite direction (clockwise), bringing smoke to Panels A and H. Fainting and death began in these panels shortly after.

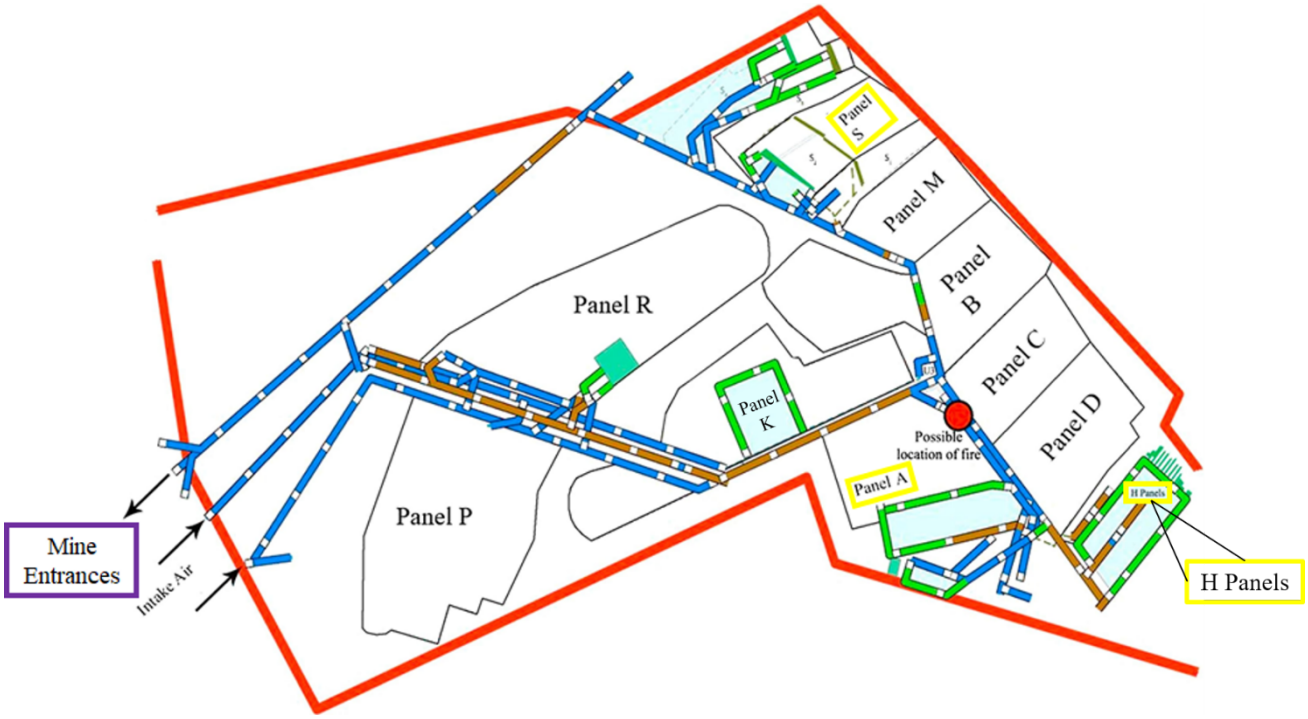

Figure 1. This picture shows a simplified layout of the Soma Mine. Highlighted in yellow, Panels A, H, and S are the only panels where workers were present during the fire. The red dot near Panel A marks the supposed location of the fire. The black arrows on the left of the figure indicate the counter-clockwise direction of airflow through the ventilation system (shown by the blue lines in the figure) (Leveson & Düzgün, 2018, p. 39, modified by authors).

Of the 301 fatalities, 209 were caused by the failure of the mine management to notify the workers that they needed to evacuate. These workers were the ones in Panel S, and despite being trapped by the smoke, they would not have even been in the mine if they had been told to evacuate initially. The remaining 92 workers in Panels A and H were safe from the initial smoke but died

because of the mine management's reckless decision to switch the airflow (Leveson & Düzgün, 2018, p. 49). In summary, while lack of adherence to safety protocol and poor decisions both contributed significantly to worker deaths, none of the workers would have died if they had functional masks to protect them from the deadly smoke.

Ethical Analysis

Neither Soma Mining Inc. nor the larger Soma Holding Company has an explicit ethical code to guide their actions. For this reason, the following section will use the International Council on Mining & Metals (ICMM) Mining Principles as a Code of Ethics to analyze Soma Mining's response to the coal mine explosion. The following table (Table 1) highlights key principles of the ICMM Code that Soma Mining Inc. failed to uphold resulting in the mining disaster.

Table 1. The table portrays the two Mining Principles used in the ethical analysis of the actions of Soma Mining Inc. (ICMM, 2020, pp. 3, 7).

ICMM Mining Principles	
Principle Four - Risk Management	Implement effective risk-management strategies and systems based on sound science, and which account for stakeholder perceptions of risk.
Principle Nine - Social Performance	Pursue continual improvement in social performance and contribute to the social, economic, and institutional development of host countries and communities.

The following elaborates on the unethical violations of the listed Mining Principles by Soma Mining Inc. and the contribution of each violation to this preventable tragedy.

Principle Four: Risk Management

Principle Four of the ICMM Code states the importance of investing in appropriate risk management infrastructure to protect workers, especially in high-risk work environments. This infrastructure includes the allocation of attention and resources to establish reliable communication

throughout the mine, provide quality safety equipment, plan an emergency response, and provide emergency escape routes and safe rooms (ICMM, p. 7). The failure of Soma Mining Inc. to uphold the standards set by Principle Four was propagated by a series of unethical decisions permitting unsafe working conditions, which cost the lives of many innocent workers.

A Failed System of Communication

Soma Mining Inc. violated this principle by failing to implement a resilient system of communication between the workers and mine management staff in the Soma Mine. The only method of communication present in the mine at the time of the disaster were landline phones. Because of the power outage, induced by the fire, these phones were no longer operable and the underground workers were left without a means of communication with mine management. Throughout the disaster, the workers were never informed of the nature of the situation, even after smoke began spreading throughout the mine (Hansen, 2014).

Miners were unaware of the severity of the fire and assumed it would be contained. This lack of situational knowledge prevented the workers from evacuating the mine when they had the opportunity (Leveson & Düzgün, 2018, pp. 49-50). Even though the mine had landline phones, there was no prior consideration of the effects a fire could have on their only form of communication. Because Soma Mining Inc. did not prepare for a power outage during an emergency, the miners were cut off from the direction of the mine management and left uninformed in a dangerous situation.

Expired Safety Masks

Since the mining workplace is a high-risk environment for fires, safety masks are extremely important to protect the workers in case of an emergency. The masks have a limited period of functionality after which they can no longer filter out toxic fumes. Each miner in the Soma Mine

was equipped with a safety mask, but the majority were outdated and non-functional (Hansen, 2014). Soma Mining Inc. failed to supply the mineworkers with viable safety masks, which is an egregious violation of Principle 4 of the ICCM code. Of the many preventative measures Soma Mining neglected to implement, the safety masks were the most vital in protecting the health of individual workers. Having masks could have kept the workers safe from the smoke and extended the time they had to be rescued. Without functional masks, workers were left unprotected from the deadly carbon monoxide.

Poor Preparation for Emergency Response

Due to a distinct lack of emergency preparation, actions taken by the mine management resulted in worker deaths separate from those caused solely by carbon monoxide poisoning. If the mine management team had a planned and practiced emergency response, they would have been better able to protect the lives of the trapped workers. Management would have known the hazardous effects of reversing the ventilation and perhaps could have devised another solution. Instead, this decision resulted in the poisoning of even more workers and largely nullified the purpose of having a search and rescue team. This team intended to save the trapped workers that were still alive. By switching the ventilation, the management staff effectively sentenced 92 of these remaining miners to death (Leveson & Düzgün, 2018, p. 49). The search and rescue team was able to save a few miners with functional masks but served as a means of removing the bodies from the mine for the rest.

No Emergency Exits or Safe Rooms

Another significant flaw of the Soma Mine was its lack of emergency escape routes. These escape routes are instrumental in preventing miners from becoming trapped underground during emergencies. They provide backup exit strategies, crucial for cases where the main roads become

inoperable such as in the Soma Disaster (Leveson & Düzgün, 2018, p. 49). Additionally, the mine lacked necessary safe rooms, which are designated rooms sealed off from the mine ventilation and supply a separate source of fresh air. Safe rooms are expensive to build and maintain but could have saved the workers from carbon monoxide poisoning if they had been in place (Hansen, 2014).

All around, Soma Mining's inability to provide proper infrastructure to manage risk was a major contributing factor in the deaths of 301 miners. Principle Four of the ICMM code emphasizes the importance of prior planning to protect as many lives as possible in the event of an emergency. Each layer of risk management had the potential to increase the rate of survival in the Soma Mine Disaster. With a reliable method of communication, workers could have evacuated before the fire escalated. With functional safety masks, workers could have been protected for longer against the poisonous fumes. The practiced emergency response could have prevented the mine management from causing additional deaths. Finally, the presence of emergency escape routes or safe rooms could have provided workers the means to reach safety before the gas took effect. If Soma Mining Inc. had maintained the safety infrastructure of the mine as outlined in Principle Four, they could have minimized the deaths from the Soma Mine Disaster.

Principle Nine: Social Performance

Principle Nine of the ICMM Mining Code states that mining companies have a responsibility to support the development of the communities surrounding the mine (ICMM, 2020, p. 10). By refusing to protect the well-being of the workers in the Soma Mine, Soma Mining Inc. endangered the livelihoods of the communities that depend on those workers.

Mining is the main source of income for many Turkish families, especially in rural towns near the mines. Many men are not able to complete primary education because educational institutions are located too far from where they live. Without an educational background, men have

no choice but to resort to manual labor such as mining, despite the dangers, if they want to provide for their families (Yeginsu, 2015).

Like many other mining companies, Soma Mining took advantage of the fact that men in these rural communities were dependent upon the wages earned from mining. Soma Mining used this dependence as leverage against the miners, forcing them to work in an unsafe environment (Hansen, 2014). Such behavior is a direct violation of Principle Nine. According to the ICMM Principles, Soma Mining Inc. should support activities that contribute to the well-being of local communities (ICMM, 2020, p. 10). Instead, Soma Mining has not only chosen to exploit the workers in these communities but also endanger the livelihoods of their families.

Social and Economic Implications

The Soma Mine Disaster was the most devastating incident recorded in the history of mining disasters in Turkey (Aksoğan et al., 2014, pp. 6-7). Casualties exceeded that of any other mining incident recorded in the country (Yeginsu, 2015). The devastating effects of this disaster posed serious economic and social consequences for the nearby communities as well as severely traumatized the survivors of the disaster.

Death from carbon monoxide is a gruesome sight. Men screamed as their lungs exploded. Rescuers described searching through heaps of bodies, seeking the warm flesh of the living. The mine's conveyor belt was used to transport bodies out of the mine. Every miner trapped in the mine thought that they were going to die. Even if miners miraculously lived through the disaster, they were forever scarred by the memory of the incident. It is impossible to forget the horror they witnessed. The psychological effects of surviving this disaster will likely cause them pain for the rest of their lives (Hansen, 2014).

In communities affected by the Soma Disaster, widows now struggle to make ends meet for their families. Initially, their husbands brought in a large portion of the household money. Now the women have to pick up extra jobs in addition to raising their children alone. Soma Holding promised these families $83,000 in compensation for the disaster, but it was never paid. Rural families do not have the means, educational background, or time to hire lawyers to secure the promised payment (Yeginsu, 2015). They survive off of monthly life insurance and any jobs they can find to make ends meet.

In comparison to the physical hardships of losing a family member, the psychological effects are many times worse. According to a New York Times report, it is common practice for widows of the disaster to take daily sedatives in order to ease their emotional pain (Yeginsu, 2015). Not only did they lose their loved ones, but they are constantly faced with the fact that mining companies continue to put workers at risk even after such a terrible disaster. The mining safety culture in Turkey has not changed. The Soma Mine Disaster has only brought greater devastation to communities that already faced significant hardships.

Conclusion

As horrific as the casualties were, the Soma Mine Disaster was not an isolated event. A disaster of this magnitude was the product of an unethical mindset behind the safety culture surrounding the Turkish mining industry. Both the Turkish government and private mining companies focus solely on maximizing profits to the point where poor safety has become a normalized aspect of the mining industry.

This mindset enabled Soma Mining Inc. to deprive workers of their rights, failing to protect them from incidents such as the Soma Mine Disaster. In the event of an emergency, the Soma Mine was unequipped with proper safety infrastructure required to protect the lives of the workers.

Without working masks, emergency exits, safety rooms, or an emergency response plan, the miners were left at the mercy of the deadly carbon monoxide gas.

In a press release following the disaster, Turkish President Recep Tayyip Erdoğan attempted to justify the Soma Disaster by saying "I went back in British history. Some 204 people died there after a mine collapsed in 1862. In 1866, 361 miners died in Britain. In an explosion in 1894, 290 people died there. Take America, with all of its technology and everything. In 1907, 361. These are usual things" (Hansen, 2014). Erdoğan, the most powerful and influential political leader in all of Tukey, considered the worst mining disaster the country has ever seen as an understandable side-effect of industrial growth. The only way to explain this cruel mindset is that worker lives are viewed as expendable by the Turkish government. Until the Turkish people are able to elect leadership that cares for the well-being of the occupational workers, workers will continue to die from preventable accidents.

This report is limited to the analysis of the actions of Soma Mining Inc. in regards to the Soma Mine Disaster, but an important consideration is whether or not this company has been held responsible. It is worthwhile to investigate if any legal action has been taken against the company and what the outcome was. Companies like Soma Mining Inc. must be forced to reform their ways in order to reestablish mine safety standards in the country. Ideally, this reformation needs to be directed by the Turkish government in order to ensure a systematic change in the Turkish mine safety culture. Until then, disasters like Soma will continue to claim the lives of Turkish miners.

The Soma Coal Mine Disaster is the manifestation of disregard for human life on a national level. Massive casualties result when an entire government trivializes the importance of safety and propagates a profit-driven culture of operation. If safety is not a priority for the institution that

exists to enforce safety regulations upon the mining industry, it sets up the entire industry for failure and its workers for misery.

Word Count: 3980

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This information report from Greenpeace Mediterranean provides a detailed assessment of Turkey's mining and coal policies regarding the Soma Coal Mine Disaster. Additionally, it analyzed the operations of the mine and the economics that drove Soma Holdings. Furthermore, the report discussed the social ramifications and how mining incidents can have a global impact. Greenpeace Mediterranean has a bias as an environmental organization criticizing unethical mining practices.

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variety of sub-par measures taken that lead to a high number of casualties from a mining fire. Some of these factors include inadequate safety precautions, fault in ethics, risky decisions, and improper system control constraints.

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This article provides an update of the release of the updated ICMM Mining Principles. The updated principles include greater transparency with the validation of mining and metal facilities at a site level.

International Council on Mining and Metals (2020, January). Mining principles. Retrieved from https://www.icmm.com/mining-principles

This page provides the ICMM Mining Principles which serves as a comprehensive Code of Ethics. All companies and associations affiliated with ICMM are required to uphold the principles and expectations provided in the code. This code serves to create an ethical and sustainable mining and metal industry and is used as the basis for the ethical arguments in this paper.

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This infographic from Workplace Safety North illustrates respirators and how to properly use them in mines and mining plants. It outlines the importance of mining safety and the health precaution checklist that workers should follow.

Yeginsu, Ceylan. "Anger and Grief Simmer in Turkey a Year after Soma Mine Disaster." *The New York Times*, 2 June 2015. Retrieved from https://www.nytimes.com/2015/06/03/world/europe/anger-and-grief-simmer-in-turkey-a-year-after-soma-mine-disaster.html

This news article the toll and lasting impact of the Soma Coal Mining Disaster a year after the mine explosion. The article interviews many residents and details how their families' lives have been affected by the disaster.